High Latitude Climate Feedbacks Session

Glaciers/Icebergs
> Hoffman, Condron

Ocean
> Hu, Cessi

Sea Ice
> Turner, Hunke

Biogeochemistry
> Zhuang, Elliott

Regional Arctic System Modeling
> Roberts, Maslowski, Cassano

Atmosphere
> Sejas

Exciting New Results

Lots of new, detailed parameterizations
(exciting + terrifying)
examples:

- basal lubrication of ice sheets
- icebergs
- prognostic salinity
- biogeochemistry in sea ice

Frontiers

short:
increased process resolution
develop, evaluate new processes parameterizations
long:
answer big science questions (SLR)
more detailed parameterizations
great computing power
more generally:
high latitude focus needs to be expanded to global view
e.g.
effects of Bering Str on AMOC
bergs on AMOC
AMOC connection between NH, SH

Gaps 1

DATA
lack of data, poor quality of data, poor interpretation of data
need complete observations of full coupled systems
are monitoring systems adequate? e.g.

    salinity effects on AMOC
     sea ice salinity
     methane emissions from lakes

snow

   e.g. sea ice thickness:
   satellite obs need snow, but modeling snow needs data
   e.g. surface temperature:
   reanalysis used to evaluate models, but reanalyses are
model output

MODELING STRATEGIES
snow
icebergs in climate models
coupling strategies (e.g. inertial oscillations)
    matter for feedbacks

CAPTURING FEEDBACKS in data and in models
How do we isolate individual feedback processes, or
measure contributions to them from various physical
changes, in complex adaptive systems?
especially in the real world
e.g.
  clouds
  biogeochemistry
  ice/snow volume
  icebergs

Leveraging Connections

labs/universities
modelers/observers
modeling hierarchy (e.g. RASM/CESM)